

Appendix A

Sampling and Analysis Plan

Contents

Section 1 Introduction

1.1	Project Personnel and their Responsibilities	A1-1
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Section 2 Field Exploration and Sampling Procedures

2.1	Monitoring Well Installation	A2-1
2.1.1	Drilling	A2-1
2.1.2	Well Installation	A2-1
2.2	Well Development and Sampling	A2-2
2.2.1	Development	A2-2
2.2.2	Groundwater Sampling	A2-2
2.3	Survey	A2-3
2.4	Groundwater Level Monitoring	A2-3
2.5	Slug Test	A2-4
2.5.1	Field Methods	A2-4
2.5.2	Analysis of Slug Test Data	A2-4
2.6	Stormwater Sampling	A2-5

Section 3 Chemical Analysis A3-1

Section 4 Quality Assurance Procedures

4.1	Precision	A4-1
4.1.1	Field Precision Objectives	A4-1
4.1.2	Laboratory Precision Objectives	A4-1
4.2	Accuracy	A4-2
4.2.1	Field Accuracy Objectives	A4-2
4.2.2	Laboratory Accuracy Objectives	A4-2
4.3	Completeness	A4-3
4.3.1	Field Completeness Objectives	A4-3
4.3.2	Laboratory Completeness Objectives	A4-3
4.4	Representativeness	A4-4
4.4.1	Measures to Ensure Representativeness of Field Data	A4-4
4.4.2	Measures to Ensure Representativeness of Laboratory Data	A4-4
4.5	Comparability	A4-4
4.5.1	Measures to Ensure Comparability of Field Data	A4-4
4.5.2	Measures to Ensure Comparability of Laboratory Data	A4-5
4.6	Quality Control Samples	A4-5
4.6.1	Field Duplicates	A4-5

**Section 5 Sample Containers, Custody Procedures, Shipping, Documentation and
Sample Identification**

5.1	Sample Containers	A5-1
5.2	Custody Procedures	A5-1
5.3	Shipping	A5-2
5.4	Documentation and Sample Identification	A5-2

Section 6 Equipment Decontamination and Waste Control

6.1	Drilling Equipment.....	A6-1
6.2	Soil Sampling Equipment	A6-1
6.3	Groundwater Sampling Equipment.....	A6-2
6.4	Waste Control	A6-2

Attachments

Attachment A Field Forms

Appendix A

Sampling and Analysis Plan

Section 1

Introduction

This sampling and analysis plan (SAP) has been prepared to describe the methods that will be used to conduct supplemental remedial investigation activities at the Site. The Site is defined by the extent of contamination caused by hazardous substances at the Site. The Port of Tacoma and USG Interiors (USGI) are working with the Ecology to supplement data previously collected at the Site to complete the remedial investigation, which will then be used in developing recommendations for any required remediation. This SAP was prepared as an appendix to the Supplemental Remedial Investigation Work Plan, which provides greater detail about the Site history, previous investigations, and interim actions. The Work Plan also describes the purpose and scope of work to be completed.

The objective of this SAP is to ensure that sample collection, handling, and analysis will result in data of known and acceptable quality.

1.1 Project Personnel and their Responsibilities

Supplemental remedial investigation activities will be conducted by Camp Dresser & McKee Inc. (CDM) on behalf of the PLPs. Mr. Martin Carlson is CDM's technical lead on the project. Ms. Pam Morrill is the project manager and has responsibility for the day to day management and coordination of the project. Ms. Lanita Stevens is USGI's designated representative. Ms. Suzanne Dudziak is the Port of Tacoma's designated representative. Analytical Resources Incorporated (ARI) of Seattle, Washington is the analytical laboratory for this project. Ms. Mary Lou Fox is ARI's project manager and will serve as the laboratory's primary contact person and will ensure that the project requirements are met by the laboratory.

Section 2

Field Exploration and Sampling Procedures

2.1 Monitoring Well Installation

2.1.1 Drilling

Drilling and monitoring well installation will be accomplished using a truck-mounted drill rig equipped with 6-inch-diameter hollow-stem augers. Borings and monitoring wells to be completed in the surface aquifer will be terminated upon reaching the top of the native tideflat aquitard, which occurs at approximately 10 feet below ground surface (ft bgs). Monitoring wells to be completed in the second aquifer will be drilled through the aquitard and completed in the underlying water-bearing sand. A bentonite seal will be extended across the entire length of the silt aquitard during well completion.

During drilling, soil will be logged and sampled at 2-1/2-foot intervals by driving a split-barrel sampler 18 inches into undisturbed soil ahead of the borehole bottom. Driving will be terminated when the full 18-inch drive is completed. Each sampled interval will be logged according to the Unified Soil Classification System.

The following procedures will be used to collect subsurface soil samples:

1. Driller retrieves split-barrel sampler from borehole.
2. The split-barrel sampler is opened and sample recovery is measured.
3. A soil sample is collected into a 4-ounce laboratory-grade sample jar if the sampled interval is to be submitted for analysis. Sample containers will be labeled, secured with a chain-of-custody seal, placed in a chilled cooler.
4. The contents of the sampler will be described on the field log.
5. The split-barrel sampler will be decontaminated by the procedures described in Section 5 of this appendix.

2.1.2 Well Installation

A two-inch-diameter monitoring well will be installed in selected borings. Wells will be constructed in accordance with Chapter 173-160 Washington Administrative Code (WAC) Part Two, General Requirements for Resource Protection Wells and Geotechnical Soil Borings (September 2, 1998).

The monitoring wells will be constructed of 2-inch-diameter Schedule 40, flush-threaded PVC pipe with 0.010-inch milled slot screen surrounded by a silica sand filter pack. The top of the screen in surface aquifer wells will end approximately 1 to 2 feet over the top of the water table to account for seasonal variation. Bentonite chips will be installed above the top of the filter pack to form a hydraulic seal. A tamper-

resistant, flush-mount, protective casing will be set in concrete over the upper end of the PVC riser.

2.2 Well Development and Sampling

2.2.1 Development

New monitoring wells will be developed by a combination of bailing and surging. Equipment used during well development will be decontaminated in accordance with the procedures outlined in Section 5. Typical well developing sequence is as follows:

1. Measure and record depth to water. Collect a bailer of groundwater and measure pH, conductivity, and temperature.
2. Surge well to loosen sediment within sand pack. Surging is performed with a bailer or surge block that has a slightly smaller diameter than the PVC well casing.
3. Bail well to remove sediment and groundwater. Measure pH, conductivity, and temperature at 5-gallon intervals.
4. Terminate well development after the water is essentially sediment free and pH, conductivity, and temperature are stable. Typical water volume bailed from a 2-inch monitoring well during development is 10 to 20 gallons. Measure water level after development is complete.

2.2.2 Groundwater Sampling

Monitoring wells that are significantly tidally influenced will be sampled near low tide. Prior to collecting groundwater samples, monitoring wells will be purged using "low flow" purging and sampling techniques. Low-flow sampling techniques will be used to minimize disturbance to the aquifer during purging and thereby provide a more representative groundwater sample.

Monitoring wells will be purged using a peristaltic pump. Purge water will be directed through a flow cell containing parameter measurement equipment. Groundwater purging and parameter measurement techniques to be used for this project are described below:

1. Measure water depth to the nearest 0.01 foot using a SINCO water-level sounder. Record depth to water measurement on the groundwater sampling form.
2. Calibrate parameter measurement equipment per manufacturer's instructions as described below:
 - The electrical conductivity meter will be checked against factory supplied calibrator solutions prior to bringing the meter onsite.

- The pH meter will be calibrated daily prior to beginning sampling using two manufacturer supplied buffer solutions (pH 4.0 and 7.0).
 - The temperature probe will be checked against a mercury thermometer prior to bringing the meter onsite.
 - Dissolved Oxygen: The meter will be calibrated according to the procedures described in the factory manual.
3. Lower the tubing into the well and connect to the pump and flow cell.
 4. Begin purging at a rate of no more than 1.0 liter per minute, directing purge water through the flow cell.
 5. Monitor pH, temperature, conductivity, and dissolved oxygen and record readings at 2-liter purge intervals. Record parameter measurements on the groundwater sampling form.
 6. Purging will be considered complete when turbidity is less than 10 NTU and the remaining parameters have stabilized within approximately 5 percent over at least two measurements.

Groundwater sampling will be conducted immediately after parameters have stabilized. Groundwater samples to be analyzed for total metals and total petroleum hydrocarbons will be collected into laboratory supplied sample containers directly from the discharge hose after removing the hose from the flow cell. Groundwater samples to be analyzed for dissolved metals will be field filtered before placement into the sample bottle. Field filtering will be accomplished by placing the tubing discharge over the inflow end of a 0.45 micron filter and discharging the filtered water directly into the sample bottle.

2.3 Survey

The locations and elevations of new and existing monitoring wells will be surveyed by a licensed surveyor in accordance with ASTM D5092(10). Each well location will be measured horizontally to the nearest 0.1 foot. Well casing elevations will be measured to the nearest 0.01 foot using an established Port of Tacoma datum. The staff gauge on the 5-pile Dolphin in the Hylebos Waterway will also be surveyed to the nearest 0.1 foot. If necessary, the gauge will be replaced and then surveyed (see Section 2.4).

2.4 Groundwater Level Monitoring

Prior to implementing the groundwater level monitoring program, the staff gauge located on the 5-pile Dolphin in the Hylebos Waterway adjacent to the Taylor Way Property will be cleaned. The staff gauge will be accessed using a dinky manned by two field personnel. Complete rounds of water levels will be measured both at high

and low tide intervals. Predicted tidal information for the Tacoma Tideflats area will be obtained from the NOAA website to determine the times of water level measurements. The actual tide level in the waterway will be determined from the staff gauge which contains measurements in 0.1-foot increments and spans the anticipated high/low tide intervals.

Wells will be uncapped and allowed to equilibrate with atmospheric pressure. The water levels will then be measured using an electronic sounder. Measurements will occur within 30 minutes of the tidal high/low. Continuous water level monitoring will be conducted in selected wells over a 24 hour period using a PT2X sensor.

2.5 Slug Test

2.5.1 Field Methods

A CDM hydrogeologist will measure and record the static water level of the wells to be slug tested. After recording the static water level, CDM will install a Hermit data logger/sensor system at the appropriate depth based on the static water level measurement. This logger system will record water levels for the duration of the test. Intervals will be set to 30 seconds and will be reduced if subsurface conditions and well response to the initial slug require faster intervals.

CDM will use potable water (5 gallon bucket) to inject the 2-inch diameter well with a slug of water. A nearby clean water source, or large tank, should be available on site if more water is needed to stress the well.

A CDM hydrogeologist will start data logging water levels prior to introducing the slug of water. After introducing the slug of water, the CDM hydrogeologist will periodically measure and record manual readings of the water level as it returns to pre-test static conditions. These measurements will provide a backup record to the data logger/sensor readings.

Water level measurements will continue for about 1 hour or until the water levels return to pre-test static conditions.

Slug tests will be performed on four monitoring wells; MW2, MW3B, MW9, and MW19 (on Port of Tacoma property). A duplicate test should be performed on one of the wells.

CDM will obtain a final round of water level measurements from tested wells at the end of the day.

2.5.2 Analysis of Slug Test Data

CDM will download and reduce data logger and backup manual water level measurements and bring the data into an MS/excel spreadsheet.

After initial reduction, CDM will bring the data into a spreadsheet and plot each test on a semi-log graph.

CDM will plot the natural logarithm of water level recovery against the time since the start of the test. The analysis portion of the test should form a straight line portion of the response curve.

CDM will enter the values obtained from the slope of the straight line data into the Hvorslev equation to obtain the hydraulic conductivity (K) of the screened sediments.

2.6 Stormwater Sampling

Water samples will be collected from the outfall to the Hylebos Waterway directly into appropriate laboratory supplied containers. Dry weather flows, if any, will be collected at any time that it is observed. Dry weather is considered to be any period in which no rainfall has occurred for at least 48 hours. Wet weather flow must be sampled during a storm event under the following conditions:

1. The storm event has been preceded by at least 24 hours of no measurable precipitation.
2. Have an intensity of at least 0.1 inches of rainfall within a 24 hour period.
3. The grab samples will be collected within the first hour of discharge, or as soon as practicable.

Section 3

Chemical Analysis

Soil and groundwater samples will be submitted to Analytical Resources Inc. (ARI) in Seattle, Washington for analysis.

Groundwater samples will be analyzed for the following metals on the total and dissolved basis: antimony, arsenic, chromium, copper, nickel, lead, and zinc by EPA Method 200.8 (ICP-MS) and for diesel-range petroleum hydrocarbons by Northwest Method WTPH-Dx.

Collected soil samples will be analyzed for total arsenic and lead by EPA Method 6010B (ICP).

Table A1 summarizes the analytical methods, target reporting limits, and holding times for each media and analyte.

Section 4

Quality Assurance Procedures

The overall quality assurance (QA) objective for this project is to develop and implement procedures for field sampling, chain-of-custody, laboratory analysis, and reporting that will provide technically and legally defensible results. This section discusses QA objectives and procedures for this project.

4.1 Precision

Precision is a measure of reproducibility of measurements of the same characteristic, usually under a given set of conditions.

4.1.1 Field Precision Objectives

Field precision will be assessed by the collection and analysis of field duplicates and will be expressed as relative percent difference (RPD). Duplicate samples are analyzed to check for matrix variability and analytical method reproducibility. One duplicate sample will be collected for every 20 samples collected, or one per sampling round if less than 20 samples are collected. Soil samples will be co-located. Duplicate soil samples will be analyzed for the same parameters. Duplicate groundwater samples will be analyzed for metals on the totals basis and petroleum hydrocarbons.

4.1.2 Laboratory Precision Objectives

The control limits for accuracy automatically identify the precision of a method. In the analysis of samples in a batch, if the recoveries of the analytes of interest are within control limits, then the precision also is within control. Precision also may be calculated in terms RPD. Precision control limits are outlined in **Table A1**.

Precision will be assessed by comparing the analytical results between laboratory duplicates. The RPD will be calculated for each pair of duplicate analyses using the following equation:

$$RPD = \frac{X_1 - X_2}{(X_1 + X_2)/2} (100\%)$$

Where:

RPD = relative percent different.

X1, X2 = value of sample 1 and sample 2.

RPDs may be compared to the laboratory-established RPD control limits for the analysis. Precision of duplicates depends on sample homogeneity.

4.2 Accuracy

Accuracy is the degree of agreement of a measurement or average of measurements with an accepted reference or "true" value and is a measure of bias in the system. The accuracy of a measurement system is impacted by errors introduced through the sampling process, field contamination, preservation, handling, sample matrix, sample preparation, and analytical techniques.

4.2.1 Field Accuracy Objectives

The achievement of accurate data in the field will be addressed through the adherence to all sample handling, preservation, and holding times.

4.2.2 Laboratory Accuracy Objectives

Results for method blank and laboratory control samples will be the primary indicators of accuracy. These results will be used to control accuracy by requiring that they meet specific criteria. As spiked samples are analyzed, spike recoveries will be calculated and compared to acceptance limits.

The calculation formula for percent recovery is:

$$R\% = \frac{(C_1 - C_2)(100\%)}{C_3}$$

Where:

R% = Spike amount recovered.

C1 = Concentration of analyte in spiked sample.

C2 = Concentration of analyte in unspiked sample.

C3 = Concentration of spike added.

Acceptance limits as listed in **Table A1** will be based on previously established laboratory performance for similar samples. In this approach, the control limits reflect the minimum and maximum recoveries expected for individual measurements for an in-control system. Recoveries outside the established limits indicate some assignable cause, other than normal measurement error, and possible need for corrective action. Corrective actions may include recalibration of the instrument, reanalysis of the QC sample, reanalysis of the samples in the batch, re-preparation of samples in the batch, or flagging the data as suspect if the problems cannot be resolved. For contaminated samples, recovery of matrix spikes may depend on sample homogeneity, matrix interference, and dilution requirements for quantitation.

4.3 Completeness

Completeness is a measure of the amount of valid data obtained from a measurement system compared to the amount expected under normal conditions.

4.3.1 Field Completeness Objectives

Field completeness is a measure of the amount of valid measurements obtained from all the measurements taken in the project. Field completeness for this project will be greater than 90 percent.

4.3.2 Laboratory Completeness Objectives

The project laboratory will provide data meeting QC acceptance criteria for a minimum of 90 percent of the samples tested using the SW-846 and other standard methods. At the completion of sample analysis testing, the percent completeness will be calculated by the following equation:

$$C\% = \frac{S}{R} (100\%)$$

Where:

C = completeness.

S = number of successful analyses.

R = number of requested analyses.

Successful laboratory analyses can only be accomplished if both the field and laboratory portions of the project are successful. Factors that adversely effect completeness include:

- Receipt of samples in broken containers.
- Receipt of samples in which chain-of-custody or sample integrity is compromised in some way.
- Samples received with insufficient volume to perform initial analyses or repeat analyses, if initial efforts do not meet QC acceptance criteria.
- Improperly preserved samples.
- Samples held in the field or laboratory longer than expected, thereby jeopardizing holding time requirements.
- Samples that have unclear analyses requests.

4.4 Representativeness

Representativeness qualitatively expresses the degree to which data accurately and precisely represents a characteristic of a population, parameter variations at a sampling point, a process condition, or an environmental condition.

Representativeness expresses the degree to which a sample represents a source material, an environmental media, or a geochemical process. Representativeness is a qualitative parameter, dependent on the proper design of the sampling program and proper choice of extraction and analytical methods.

The characteristic of representativeness cannot be quantified. Subjective factors to be taken into account are as follows:

- Degree of homogeneity of a site.
- Degree of homogeneity of a sample taken from one point in a site.
- Available information on which a sampling plan is based.

4.4.1 Measures to Ensure Representativeness of Field Data

Field duplication and field replication, as defined under precision, also are used to assess representativeness. Two samples that are collected at the same location and at the same time are considered equally representative of this condition, at a given point in space and time.

4.4.2 Measures to Ensure Representativeness of Laboratory Data

Representativeness in the laboratory is ensured by using the proper analytical procedures, meeting sample holding times, and analyzing and assessing field duplicate samples. Precautions are taken to extract from the sample container an aliquot representative of the whole sample. This includes premixing the sample and discarding foreign material (i.e., stones, twigs, pebbles, etc) from soil samples.

4.5 Comparability

Comparability expresses the confidence with which one data set can be compared with another. The extent to which existing and new analytical data will be comparable depends on the similarity of sampling and analytical methods.

4.5.1 Measures to Ensure Comparability of Field Data

Comparability for the supplemental RI will be optimized for this work by utilizing similar well drilling and installation procedures, similar groundwater sampling techniques, and similar surface soil sampling techniques as were previously used during prior Site investigations by CDM and Kennedy/Jenks Consultants.

4.5.2 Measures to Ensure Comparability of Laboratory Data

Planned analytical data will be comparable when similar sampling and analytical methods are used as documented in this SAP. Comparability is also dependent on similar QA objectives.

4.6 Quality Control Samples

4.6.1 Field Duplicates

Duplicate samples are analyzed to check for matrix variability and analytical method reproducibility. One duplicate sample will be collected for every 20 samples collected, or one per sampling round if less than 20 samples are collected. Soil samples will be co-located. Duplicate soil samples will be analyzed for the same parameters. Duplicate groundwater samples will be analyzed for metals on the totals basis and petroleum hydrocarbons.

Section 5

Sample Containers, Custody Procedures, Shipping, Documentation and Sample Identification

5.1 Sample Containers

Sample bottles will be provided by the analytical laboratory (ARI). Soil samples will be collected into pre-cleaned 4-ounce glass sample containers. Water samples to be analyzed for metals will be collected into pre-cleaned 500-milliliter (ml) polyethylene bottles containing nitric acid as a preservative. Water samples to be analyzed for petroleum hydrocarbons will be collected into pre-cleaned 500-ml amber glass bottles containing hydrochloric acid as a preservative. The containers will be kept closed and in their shipping boxes until used. After sampling, the containers will be labeled, secured with chain-of-custody seals, placed in coolers, chilled to 4°C, and shipped to the laboratory.

5.2 Custody Procedures

A chain-of-custody protocol will be followed to maintain and document sample possession. Each sample will be labeled immediately after collection. Each label will include, at a minimum, the following information:

- Project name and number.
- Initials of the collector.
- Date and time of collection.
- Number that uniquely identifies the sample and its collection location (the sample numbering sequence will not indicate to the laboratory which samples are duplicates).
- Preservative (if any).

Samples will be kept in the sampler's custody until the end of each day, when they will be shipped to the laboratory, if possible.

Samples will be shipped to the analytical laboratory with chain-of-custody records, establishing the documentation necessary to trace sample possession from the time of collection. The chain-of-custody records will contain, at a minimum, the following information:

- Sample number.
- Signature of collector.

- Date and time of collection.
- Place of collection.
- Sample matrix.
- Signatures of persons involved in the chain of possession.
- Inclusive dates of possession.
- Condition of samples.

The chain-of-custody record also will be used to indicate what analyses are required by checking the appropriate box(es) on the form. Following proper sealing and labeling, sample containers will be placed in a chilled cooler. The cooler will be closed and sealed with a custody seal.

5.3 Shipping

As described above, samples will be accompanied by a properly completed chain-of-custody form. The original and yellow copies will accompany the shipment, and the pink and gold copies will be retained by the sampler for CDM's project files. When transferring the possession of samples, the individuals relinquishing and receiving will sign, date, and note the time on the record. This record documents transfer of custody of samples from the sampler to another person, to the project laboratory, or to/from a secure storage area.

Samples will be properly packaged for shipment and dispatched to the laboratory for analysis, with a separate, signed custody record enclosed in each sample cooler. Shipping containers will be secured with strapping tape and custody seals will be attached for shipment to the laboratory. The preferred procedure includes use of a custody seal attached to the front right and back left of the cooler. The custody seals are covered with clear plastic tape. The cooler is strapped shut with strapping tape in at least two locations. Samples will either be delivered directly to the analytical laboratory by the sampler, or brought back to CDM's Bellevue office where it will be picked up by a courier for delivery to the laboratory.

5.4 Documentation and Sample Identification

The Daily Field Investigation Form is the basis of CDM's documentation. A copy of this form is included in **Attachment A**. Entries on it describe the day's activities. Field measurements and sample data will be recorded on appropriate forms and included as attachments to the Daily Field Investigation Form (see **Attachment A**). If an incorrect entry is made, the information will be crossed out with a single line and initialed and dated by the field representative.

Whenever a sample is collected or a measurement is made, a detailed description of the sample location will be recorded. The type of sampling equipment will be noted, along with sample time, sample description, sample depth, and volume and number of containers. Samples will be labeled uniquely and sequentially. Examples for each media are as follows:

Soil

Soil samples will be identified by the borehole (B), monitoring well (MW), test pit (TP), or other exploration from which they were collected. The sample depth will also be identified. For example, a sample collected at two feet below ground surface from the borehole at MW7A would be identified as MW7A-2'.

Groundwater

Groundwater samples collected from monitoring wells will be labeled with the well ID, month, and year. To ensure that there is no confusion between monitoring wells on the separate properties, the monitoring well identifiers will be prefixed by a TWP, POT or A. For example for samples collected in February 2005 the sample ID's would appear as follows:

On the Taylor Way Property:
TWP-MW4-2/05

On the Port of Tacoma Property:
POT- MW20-2/05

On the Atofina Property:
A-1B3-2-2/05

Field duplicates will receive a blind and unique sample designation, such as TWP-MW00-2/04. The sample ID's will not be named with a succeeding well ID, such as MW15 (where the number of monitoring wells end at MW14).

Section 6

Equipment Decontamination and Waste Control

Equipment decontamination and waste control during sampling activities is important to prevent the spread of contaminants, to ensure that no cross contamination occurs during sampling, and to ensure integrity of the work. Specifically, the main objectives are to:

- Contain contaminated soil and water on the Taylor Way Property so that work performed does not cause the spread of hazardous constituents within or off the Taylor Way Property.
- Decontaminate drilling and sampling equipment so that hazardous constituents are not introduced into the subsurface or samples through cross contamination.

All waste will be designated and disposed of properly in accordance with Washington State Dangerous Waste regulations, 173-303 WAC and in a manner that is protective of human health and the environment, per 173-340-820(3)(c)(vi).

6.1 Drilling Equipment

Drilling equipment, including the auger flights and sampling tools, will be decontaminated with a high-pressure steam cleaner/pressure wash prior to each use.

6.2 Soil Sampling Equipment

The following decontamination procedures will be used to decontaminate the soil sampling equipment.

1. Rinse and preclean in potable water.
2. Wash and scrub with nonphosphate-based detergent and potable water.
3. Rinse with potable tap water.
4. Rinse with deionized water.
5. Rinse in deionized water.

Solutions will be renewed as needed. Sponges and nylon scrubbers will be used during Steps 1 through 3. Equipment will be air dried, if possible, and held in clean plastic bags between uses.

6.3 Groundwater Sampling Equipment

Bailers and surge blocks used for well development will be decontaminated as described in Section 6.2. Twine used on the bailers will be discarded between each use. Tubing used for groundwater sampling will be discarded between each use.

6.4 Waste Control

All investigation derived waste will be drummed and labeled pending appropriate disposal. Drummed soil, groundwater, and decontamination water will be designated and disposed of through a contractor that specializes in waste and dangerous waste disposal.

Specifically, soil generated during drilling and water generated during groundwater development and purging will be placed in Department of Transportation (DOT)-certified 55-gallon drums. The drums will be sealed and labeled to identify the contents, volume, and date. CDM will arrange for appropriate disposal of the drummed materials in accordance with 173-303 WAC and 173-340-820 WAC.

Other waste generated during soil sampling (rubber gloves, paper towels, etc.) will be placed in plastic garbage bags and sealed shut. The garbage bags will be placed in a commercial waste collection container at CDM's office for ultimate disposal in a sanitary landfill.

Table A1
Quality Assurance Goals
 Supplemental Remedial Investigation
 2301 Taylor Way
 Tacoma, Washington

Parameter	Analytical Method	Holding Time	Reporting Limit	Accuracy Percent Recovery	Precision RPD	Completeness
WATER						
Antimony	EPA 200.8	6 months	0.2 (1-2) ^a	80 - 120%	20%	90%
Arsenic	EPA 200.8	6 months	0.2-0.5 (1-5)	80 - 120%	20%	90%
Chromium	EPA 200.8	6 months	0.5 (2.5-5)	80 - 120%	20%	90%
Copper	EPA 200.8	6 months	0.5 (2.5-5)	80 - 120%	20%	90%
Lead	EPA 200.8	6 months	1(5-10)	80 - 120%	20%	90%
Nickel	EPA 200.8	6 months	0.5 (2.5-5)	80 - 120%	20%	90%
Zinc	EPA 200.8	6 months	4 (20-40)	80 - 120%	20%	90%
TPH-						
Diesel	NWTPH-Dx	14 days	(mg/L) 0.25	54-102%	20%	90%
Oil	NWTPH-Dx	14 days	0.5		20%	90%
SOIL						
Arsenic	EPA 6010B	6 months	(mg/kg) 5	80 - 120%	20%	90%
Lead	EPA 6060B	6 months	5	80 - 120%	20%	90%

a) numbers in parantheses are reporting limit ranges for samples that require dilution due to high salts/dissolved solids.
 µg/L - micrograms per liter
 mg/L - milligrams per liter
 mg/kg - milligrams per kilogram
 TPH - Total Petroleum Hydrocarbons